



STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

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March 30, 1987

Mr. Kenneth R. Poulson  
Vice President  
Mining & Exploration  
Brush Wellman, Inc.  
67 West 2950 South  
Salt Lake City, Utah 84115


FILE COPY

Dear Mr. Poulson:

Re: Mine Reclamation Plan Review, Topaz Mining Property, Brush  
Wellman, Inc., ACT/023/003, Juab County, Utah

The Division has reviewed the Mining and Reclamation Plan (MRP) submitted January 12, 1987. The MRP does not contain sufficient information to allow the Division to give approval. Attached are the Division's review comments as to what specific information is required before further review can be made. Each comment is referenced to a regulation number in the Utah Mined Land Reclamation Act (Title 40-8, Utah Code Annotated 1955). Please respond to these comments by May 1, 1987. Any requests for variances to the regulations should be presented with justification and discussion of what measures will actually be implemented during reclamation. Please feel free to contact me if you have any questions.

Sincerely,

  
Susan C. Linner  
Reclamation Biologist/  
Permit Supervisor

jvb  
0534R-70



MINE PLAN RECLAMATION PLAN REVIEW  
Brush Wellman, Inc.  
Topaz Mining Property  
ACT/023/003  
Juab County, Utah

March 27, 1987

Rule M-3 - JRH

The operator shall incorporate previous submittals to the Division including administrative information and the submittals of May 17, July 30 and August 1, 1985 into the mining and reclamation plan. It is apparent that the operator has insufficiently addressed several sections pertaining to the reclamation of the existing and proposed mining facilities. Upon resubmittal of the information requested in this review, the operator shall incorporate into a coherent and consolidated fashion, a complete mining and reclamation plan addressing the requirements of all the regulations including bonding and reclamation cost estimates.

Rule M-3 (1)(d) - RPS

The application should submit (or state which map applies) a map depicting the items required by this regulation.

Rule M-3(1)(d)-DD

The geologic map, "Topaz Utah Geology," shows a well down gradient from the mining operations in Township 12 South, Range 12 West, Section 31. Since mining can potentially affect the groundwater supply to this well, the applicant should state who owns the well, its intended use and functional status, whether it will be used in the future, and any adverse effect that would be expected from mining operations.

The applicant must submit this information before a technical review can be conducted.

Rule M-3 (1)(e) - RPS

The applicant has submitted the required information. Methodologies used for the design of the drainage plan were technically reviewed and found to be adequate. However, finalization of the review cannot be completed until a site visit is performed. Following that field review, a final technical evaluation will be prepared for each proposed structure.



Rule M-3(2)(e)-LK

Dragging a chain over spread hay or straw mulch is not an effective way of anchoring the mulch. On the more level areas crimping should be considered and on the steeper slopes, polypropylene netting or a chemical tacifier should be used.

Rule M-3(2)(f)-LK

The applicant has not provided a time schedule for accomplishing specific tasks of reclamation. For example the plan does not indicate favorable times for seeding. Seeding is most effective when performed as late in the fall as possible, and should be planned for.

Rule M-3 (h) - RPS

The applicant should incorporate a narrative describing the disposal or uses of any water encountered or collected in the pits. This information is to include the results of a water quality analysis from a high grade and low grade pit discussed in Brush-Wellman's response dated August 1, 1985. The application should also commit to monitoring the quality of the water in the pits periodically throughout the life of the mine. Frequency and parameters to be sampled will be determined following review of the above sample results.

Rule M-5 Bonding Requirements - JRH

The company indicated that the detailed bonding estimate for the site would be submitted with the final reclamation plan. This was not provided to the Division in the latest submittal. Permit approval cannot be accomplished until the operator provides a detailed plan for reclamation construction and cost estimate.

Rule M-5 and M-10 Maps-JRH

Maps and plans currently submitted by Brush Wellman do not provide sufficient information for reclamation planning or reclamation bonding estimation. The company has and uses detailed maps for their pits which were and are flown periodically. The Division requested that these aerial contour maps of the pits and any other coverage provided in these maps be provided with the reclamation plan. Additionally, when these pits are re-flown for continuing mining operations, Brush Wellman should send updated copies of these maps with their annual reports. These maps provide sufficient contour information to determine slopes required for regrading, and revegetation purposes as well as to define the areas disturbed by mining.



Rule M-10(2)(b)-JRH

The applicant has indicated that the disposal of waste materials will be in a sanitary landfill approved by the county. Brush Wellman has not provided a copy of the approval for the landfill with their reclamation plan. Additionally, plans for the final reclamation of the landfill to be constructed in the permit area should be incorporated into the final reclamation plan.

Rule M-10(3)-JRH

Any pit or depressions left by the mining operations which are not self draining shall require the approval from Dam Safety, Department of Health and the Department of Wildlife Resources in order to achieve permit approval. Any impounding structures will have to address the requirements of structural stability, water quality and suitability for wildlife and/or grazing in the area. This information shall be incorporated into the mining and reclamation plan prior to approval by the Division.

Rule M-10(4)-JRH

The operator has not reduced the slopes of the waste dumps in accordance with this section. The operator has not shown that the proposed slopes are geotechnically stable. The configuration of the slopes shown in the reclamation plan are such that the ridge lines of the waste piles are emphasized rather than rounded in order to blend in with the surrounding terrain. The operator must provide sufficient justification for the stability of the slopes and the waste material must be left in a configuration such that the slopes are less than the angle of repose for the material. The operator should also show what the angle of repose for the material is. Reclamation of the slopes should be revised to allow for rounding of the waste pile in order to blend in with the surrounding terrain. The operator clearly needs to provide more information regarding the configuration and the stability of these slopes.

Rule M-10(5)-JRH

The operator has provided no information that the mass stability of the highwalls to be left upon the completion of mining operations is assured. The operator shall provide sufficient geotechnical information and results to conclude that the highwalls left will be stable.

Rule M-10 (7) - RPS

The application does not contain a complete discussion of proposed road reclamation sufficient to meet the requirements of this rule. Specifically, the application needs to address requirements concerning unrestricted drainage crossings and proposed reclamation plans.



Rule M-10 (11) - RPS

The application contains plans for proposed sedimentation control for the site. These proposals will require a field review to determine if the degree of control is appropriate for this site. A final review of the proposed controls will be completed following that tour.

Rule M-10(12)-LK

The applicant has requested a variance to meeting the revegetation standards of Rule M-10(12). However, it is not clear what areas the variance is being requested for and the acreage involved.

Based on the results of the limited test plots, the Division does not feel the full variance to Rule M-10(12) as requested is warranted at this time. The Division hereby proposes the following approach to revegetation and success standards:

1. The revegetation plan as proposed (see comments under Rule M-3(2)(e & f)) will be used for bonding and for revegetation in the near future.
2. Sites that are revegetated will be monitored for successful vegetation establishment, as per the seed plan used.
3. The revegetation plan will be altered from time to time for the life of mine (each 4 - 5 years) as monitoring or new technology dictates.
4. Variances to the revegetation success standard of 70% of the cover of surrounding areas will only be granted at the end of mining on a site specific basis, after considering the revegetation effort expended on the site and results of revegetation efforts on similar sites.

Rule M-10(14)-JSL

The SAR of the soil and alluvium is, relative to the tuff, low (3.48 and 6.75, respectively). To mitigate the sodium influence on the soil the applicant has proposed the application of a sulfur coated urea and  $\text{CaCO}_3$ . The sulfur would convert to  $\text{H}_2\text{SO}_4$  and react with the  $\text{Ca}^{++}$  to form  $\text{CaSO}_4$ .  $\text{CaSO}_4$  is a commonly applied amendment to reclaim sodic soils. Due to the inherent probability that the soil material has a high  $\text{Ca}^{++}$  content, it is doubtful that the  $\text{CaCO}_3$  amendment would be beneficial. If the applicant contends that more  $\text{Ca}^{++}$  is required the use of gypsum or possibly lime-sulfur would be more advantageous.



The applicant has requested a variance to not salvage and stockpile topsoil in those areas of thin, stony soils as indicated on plate 4.3-1. However, the applicant also commits (Table 4.3-2) to remove and redistribute soil from within the "stony soils" area. The Division does agree not to remove soil where soil is not present but it is not clear as to what areas and acreage is involved with the request for the variance. A full variance to Rule M-10(14) as requested is not warranted. As presented in table 4.3-2, Appendix I, and the Report on Investigation of Soils, some soil is available for salvage. The applicant must present a soil stripping map and a soil redistribution map. The Division stresses that the optimum use of available soil at the mine site is to redistribute soil over as much area as practicable.

The cation exchange capacity reported for soil sample BW-1, Appendix I is considerably high (65.7 meq/100 g) for the percentage of sand within the soil (70.9%). The same sample also has a relatively high  $\text{Cl}^-$  and cation content for the low conductivity reported (1.620 mmho/cm). The calculated conductivity is 8.9 mmho/cm. Due to the possible errors in analysis, the reported data in Appendix I, Soil Profile should be deleted from the text.

1152R-1